

# THE AVN-BASED STATISTICAL GUIDANCE MESSAGE

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## 1. INTRODUCTION

On August 31, 1994, the Techniques Development Laboratory (TDL) of the National Weather Service (NWS) expects to implement a new statistical weather forecast system to produce objective guidance for projections out to 72 hours. These statistical forecasts are based on output from the National Meteorological Center's (NMC's) Aviation (AVN) run of the Global Spectral model (Kanamitsu, 1989). Included in the guidance are forecasts of the daytime maximum (max) and nighttime minimum (min) temperature, the probability of precipitation (PoP) for 12-periods, the conditional probability of snow (CPOS) for 12-h periods (conditional on precipitation occurring), and the mean opaque cloudiness for 12-h periods. Guidance is available for each 12-h period between 12 and 72 hours after both 0000 and 1200 UTC. The forecasts are disseminated in alphanumeric messages and are distributed under many different bulletin headers (see Appendix). For NWS AFOS users, the guidance for the contiguous U.S. is distributed under the FAN category. For other users, bulletins for the NWS Eastern Region are distributed under the World Meteorological Organization (WMO) header of FEXEnn KWBC; bulletins for the NWS Central Region are distributed under the header of FEXCnn KWBC; bulletins for the NWS Southern Region are distributed under the header of FEXSnn KWBC; and bulletins for the NWS Western Region are distributed under the header of FEXWnn KWBC. The "nn" in these bulletin headers represents a number assigned to various collectives of stations. For Alaska, the AVN-based objective guidance is transmitted in the FEAK20 KWBC message; this product is not available on AFOS.

The forecasts contained in the messages are generated by applying statistical equations to output from the AVN run of the Global Spectral model. Various techniques were used in developing these statistical equations. At the time this Technical Procedures Bulletin (TPB) was written, all equations except for the PoP equations were developed with a Model Output Statistics (MOS) approach; the PoP equations were derived with a perfect prog approach. We expect to replace the perfect prog PoP equations with MOS equations during the next year. These techniques will be discussed in greater detail in a forthcoming TPB. All of the forecasts contained in the messages are passed through a calibration procedure that minimizes the mean square error of the forecasts based on previous verification data. This procedure makes the forecasts tend toward normal climatic conditions as the skill of the objective guidance tends to decrease. The calibration procedure also removes the systematic biases detected in the sample verification. The procedure generally has only a small effect on forecasts produced from equations that were derived with the MOS approach, since the MOS technique already has minimized the mean squared error, removed systematic biases, and tended the forecasts toward the climatic mean value from the developmental sample. However, if the model has changed significantly and the calibration sample is more recent than the developmental sample or if the developmental sample is on the average significantly different from the climatic normal for the same period, then the calibration procedure will provide a more significant adjustment.

Note that for the 0000 UTC cycle, the equations used to produce the AVN-based objective guidance are the same as those used to produce statistical weather guidance from the 0000 UTC Medium Range Forecast (MRF) model (Jensenius et al., 1993). For the 1200 UTC cycle, the techniques used to derive the equations are similar to those used to derive the equations for the 0000 UTC cycle. Also note that the horizontal resolution of the AVN model data used to generate the forecasts is less than that used for TDL's NGM-based MOS guidance (Dallavalle et al., 1992). Consequently, the AVN-based guidance will likely be less responsive to small-scale features than the NGM-based guidance.

NMCFANALY
FEXE40 KWBC 081200
AVN-BASED OBJECTIVE GUIDANCE 12/08/91 1200 UTC
ALB MON 09   TUE 10   WED 11
MN/MX 34 45   24 27   2
POP12 69 100   67 58   21

**Figure 2.** Same as Figure 1, except for 1200 UTC message.

For stations in the contiguous United States, forecasts of the conditional probability of snow (CPoS) will be issued only from September 16 through May 15; however, CPoS forecasts will never be available for certain stations in California and Florida where snow is very rare. For stations in Alaska, CPoS forecasts will be issued from September 1 through May 31. Due to a lack of either developmental or climatic data, the messages for some stations do not contain forecasts for all weather elements and/or projections.

## 2. MESSAGE FORMAT

The AVN-based forecasts are distributed in a series of bulletins. Each bulletin contains the stations included in the area of responsibility for one future "modernized" National Weather Service Weather Forecast Office (WFO). A separate bulletin is sent for each WFO. Figures 1 and 2 show sample 0000 UTC and 1200 UTC AVN-based objective forecast messages, respectively, for the Albany, New York, Weather Forecast Office (WFO ALY). These messages contain guidance for only one station; namely, the Albany County Airport (station ALB). The number of stations included in each FEXy whole bulletin varies according to the forecast area. In the discussion to follow, we will use the 0000 UTC FANALY/ FEXE40 KWBC message as an example. The guidance for other WFOs is disseminated under different WMO bulletin headers (see the Appendix).

A summary of the message format is given in the last two pages of the Appendix. This summary is also being distributed to TPB subscribers as a detached blue reference card.

### a. Message Heading

NMCFANALY
FEXE40 KWBC 080000
AVN-BASED OBJECTIVE GUIDANCE 12/08/91 0000 UTC
ALB SUN 08   MON 09   TUE 10
MN/MX 49   34 45   24 27
POP12 32   69 100   67 58

**Figure 1.** Sample 0000 UTC FANALY/FEXE40 KWBC message for the Albany, New York, Weather Forecast Office (ALY). This message is used in the line-by-line explanation given in Section 2.

**NMCFANALY**

**FEXE40 KWBC 080000**

**AVN-BASED OBJECTIVE GUIDANCE 12/08/91 0000 UTC**

**ALB SUN 08| MON 09| TUE 10**

The message heading shown above (see Figure 1 also) gives the AFOS product identifier for the collective (AFOS users only) [line 1], the WMO header assigned to the collective and the bulletin creation date and cycle time [line 2], the message content identifier and the forecast date and cycle time [line 3], and the station for which the guidance is valid followed by the valid day of the week and day of the month (based on UTC) for each group of forecasts [line 4].

For AFOS users, the first three lines appear at the beginning of each collective, and the fourth line appears for each station in the collective. For non-AFOS users, only the second and third lines appear at the start of each message, and the fourth line appears once for each station in the collective.

In this example, the AFOS product identifier [line 1] indicates that the collective is for stations in the area of responsibility for WFO Albany (ALY). The second line gives the WMO header (FEXE40 KWBC) for the Albany collective and indicates that the bulletin was created on the 8th day of the month during the 0000 UTC cycle. The third line gives the initial date (12/08/91) and the forecast cycle (0000 UTC) of the model data on which the guidance was based. The fourth line gives the station (ALB) for which the guidance is valid, and the valid days for each set of forecasts. Note that the valid day of the week is indicated by a three letter abbreviation.

The days in line 4 of the heading are in terms of UTC days and all forecasts, with the exception of the min/max temperatures, are valid for periods defined with respect to UTC. The min/max temperature forecasts are valid for nighttime and daytime periods, respectively, based on local standard time. Consequently, forecast values for the 0000-1200 UTC period and for the minimum temperature actually span two local calendar dates.

### **b. MN/MX - Minimum/Maximum Temperature Forecasts**

**NMCFANALY**

**FEXE40 KWBC 080000**

**AVN-BASED OBJECTIVE GUIDANCE 12/08/91 0000 UTC**

**ALB SUN 08| MON 09| TUE 10**

**MN/MX 49| 34 45| 24 27**

This row of forecasts is labeled "MN/MX" to indicate that the forecasts between any two date separators (| |) are the minimum and maximum surface temperatures, respectively, expected for the nighttime and daytime periods ending during that date. Forecast values in the message are in whole degrees Fahrenheit (°F), and three characters are allowed. Missing values are indicated by 999. Although each column gives the minimum temperature followed by the maximum temperature, note that in the 0000 UTC message the first temperature forecast appearing in the row is the maximum temperature forecast for the first day. For the 1200 UTC message, the first temperature appearing in the row is the minimum temperature forecast for the next day. In this example, the forecasts under the column labeled "MON 09" are the minimum temperature expected for the nighttime period ending Monday morning, December 9 (34°F) and the maximum temperature expected during the daytime period of Monday, December 9 (45°F). For the contiguous United States, the nighttime minimum forecasts are valid for the period from 7 pm to 8 am local standard time (LST) and that the daytime maximums are valid for the period from the 7 am to 7 pm LST. For Alaska, nighttime and daytime correspond to roughly 6 pm to 6 am LST and 6 am to 6 pm LST, respectively.

### c. POP12 - Probability of Precipitation (PoP) Forecasts for a 12-h Period

```
NMCFANALY
FEXE40 KWBC 080000
AVN-BASED OBJECTIVE GUIDANCE 12/08/91 0000 GMT
ALB   SUN 08| MON 09| TUE 10
:
POP12   32| 69 100| 67 58
```

The line labeled "POP12" contains forecasts of the probability of 0.01 inches or more of liquid-equivalent precipitation during 12-h periods. These 12-h PoPs are valid for the 0000-1200 UTC and 1200-0000 UTC periods. In the message, the forecast probabilities are given to the nearest whole percent, ranging from 0 to 100%. A missing forecast is indicated by 999. In the sample message, for the set of forecasts labeled "MON 09," the forecast PoP for the period from 0000 UTC Monday, December 9 to 1200 UTC Monday, December 9 is 69%. The forecast for the period from 1200 UTC Monday, December 9 to 0000 UTC Tuesday, December 10 is 100%.

### d. CPOS - Conditional Probability of Snow Forecasts for a 12-h Period

```
NMCFANALY
FEXE40 KWBC 080000
AVN-BASED OBJECTIVE GUIDANCE 12/08/91 0000 GMT
ALB   SUN 08| MON 09| TUE 10
:
CPOS   0| 2 29| 75 99
```

The line labeled "CPOS" gives the conditional probability of snow--conditional on the occurrence of a "significant precipitation event" during the 12-h period. These 12-h CPoS forecasts are valid for the 0000-1200 UTC and 1200-0000 UTC periods. In the development of the forecast equations, "significant precipitation events" were defined as those in which (1) precipitation was reported in at least two of the five 3-hourly observations that span the forecast period, and (2) precipitation was observed in two reports separated by at least 6 hours. For those 12-h periods that met the criteria, the predictand was set to 1 if only snow occurred and 0 if only rain occurred. If any mixture of snow and rain occurred during the period, or if any form of transitional precipitation (freezing precipitation, ice pellets, or mixed precipitation) occurred, the predictand took on a value between 0 and 1. This will be discussed in greater detail in a forthcoming TPB. In the forecast message, the conditional probabilities are given to the nearest whole percent, ranging from 0 to 100%. A missing forecast is indicated by 999. In the sample message, for the set of forecasts labeled "MON 09," the forecast CPoS for the period from 0000 UTC Monday, December 9 to 1200 UTC Monday, December 9 is 2%. The forecast for the period from 1200 UTC Monday, December 9 to 0000 UTC Tuesday, December 10 is 29%.

### e. CLDS - Mean Opaque Cloudiness Forecasts for a 12-h Period

```
NMCFANALY
FEXE40 KWBC 080000
AVN-BASED OBJECTIVE GUIDANCE 12/08/91 0000 GMT
ALB   SUN 08| MON 09| TUE 10
:
CLDS   62| 76 97| 97 88
```

The line labeled "CLDS" contains forecasts of mean opaque cloudiness (in percent) for the 0000 to 1200 and 1200 to 0000 UTC periods. A missing forecast is indicated by 999. In this example, for the set of forecasts labeled "MON 09," the forecast opaque cloudiness is 76% for the 12-h period from 0000 UTC Monday, December 9 to 1200 UTC Monday, December 9, and 97% for the 12-h period from 1200 UTC Monday, December 9 to 0000 UTC Tuesday, December 10.

### **3. AVAILABILITY**

The AVN-based objective forecast messages are generated twice daily at around 0600 and 1800 UTC. The guidance may be delayed substantially, however, if problems occur in NMC's production suite and the completion of the AVN model is delayed. These messages are then distributed on the AFOS network and disseminated on the Family of Service's Domestic Data Service, to the Air Force's Automated Weather Network, and to the Federal Aviation Administration's Weather Message Switching Center.

At this time, AVN-based objective forecast messages are available for the stations listed in the Appendix. The Appendix also gives the bulletin headers, AFOS product identifiers, regional AFOS routings, and latitudes and longitudes for each station.

At an AFOS site, a bulletin may be displayed by typing FANxxx and pressing "ENTER" (where the xxx represents the three letter identifier of the appropriate WFO site). Note that the bulletin header is automatically included at the top of the bulletin and that the two product identification lines are included in each WFO's message.

### **4. REFERENCES**

- Dallavalle, J. P., J. S. Jensenius, Jr., and S. A. Gilbert, 1992: NGM-based MOS guidance - The FOUS14/FWC message. NWS Technical Procedures Bulletin No. 408, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, 16 pp.
- Jensenius, J. S., Jr., J. P. Dallavalle, and S. A. Gilbert, 1993: The MRF-based statistical guidance message. NWS Technical Procedures Bulletin No. 411, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, 13 pp.
- Kanamitsu, M., 1989: Description of the NMC global data assimilation and forecast system. *Wea. Forecasting*, **4**, 335-342.

## TPB415 - APPENDIX

### LIST OF AVN MOS STATIONS

Location identifiers, name, WMO headers, AFOS product identifiers, AFOS regional routings, latitudes, and longitudes of stations for which AVN-based statistical guidance is distributed. For the AFOS regional routings, the letters "E", "S", "C", and "W" correspond to the NWS Region(s) to which the products are transmitted on the AFOS network (Eastern, Southern, Central, and Western Region, respectively). Only stations in the contiguous U.S. are distributed on AFOS. Latitudes and longitudes are given in degrees and minutes.

STATION ID	NAME	WMO HEADER	AFOS PRODUCT ID	AFOS REGIONAL ROUTING	LAT.	LON.	
ABE	Allentown, PA	FEXE54	KWBC	FANPHI	E	40.39	75.26
ABI	Abilene, TX	FEXS65	KWBC	FANSJT	S	32.25	99.41
ABQ	Albuquerque, NM	FEXS40	KWBC	FANABQ	SW	35.03	106.37
ABR	Aberdeen, SD	FEXC41	KWBC	FANABR	C	45.27	98.26
ABY	Albany, GA	FEXC66	KWBC	FANTLH	EC	31.32	84.11
ACT	Waco, TX	FEXS48	KWBC	FANFWS	S	31.37	97.13
ACV	Arcata, CA	FEXW42	KWBC	FANEKA	W	40.59	124.06
ACY	Atlantic City, NJ	FEXE54	KWBC	FANPHI	E	39.27	74.34
ADQ	Kodiak, AK	FEAK20	KWBC	-----	---	57.45	152.31
AGS	Augusta, GA	FEXE45	KWBC	FANCAE	ES	33.22	81.58
AHN	Athens, GA	FEXS42	KWBC	FANFFC	ES	33.57	83.19
AKN	King Salmon, AK	FEAK20	KWBC	-----	---	58.41	156.39
ALB	Albany, NY	FEXE40	KWBC	FANALY	E	42.45	73.48
ALO	Waterloo, IA	FEXC49	KWBC	FANDMX	C	42.33	92.24
AMA	Amarillo, TX	FEXS41	KWBC	FANAMA	S	35.14	101.42
ANC	Anchorage, AK	FEAK20	KWBC	-----	---	61.10	150.01
ANN	Annette Is, AK	FEAK20	KWBC	-----	---	55.02	131.34
APN	Alpena, MI	FEXC42	KWBC	FANAPX	C	45.04	83.34
AST	Astoria, OR	FEXW54	KWBC	FANPQR	W	46.09	123.53
ATL	Atlanta, GA	FEXS42	KWBC	FANFFC	ES	33.39	84.26
AUS	Austin, TX	FEXS63	KWBC	FANEWX	S	30.18	97.42
AVL	Asheville, NC	FEXS60	KWBC	FANMRX	ECS	35.26	82.33
AVP	Scranton, PA	FEXE41	KWBC	FANBGM	E	41.20	75.44
BDL	Hartford, CT	FEXE42	KWBC	FANBOX	E	41.56	72.41
BET	Bethel, AK	FEAK20	KWBC	-----	---	60.47	161.48
BFD	Bradford, PA	FEXE59	KWBC	FANCTP	E	41.48	78.38
BFF	Scottsbluff, NE	FEXC45	KWBC	FANCYS	CW	41.52	103.36
BFL	Bakersfield, CA	FEXW44	KWBC	FANHNX	W	35.25	119.03
BGM	Binghamton, NY	FEXE41	KWBC	FANBGM	E	42.13	75.59
BGR	Bangor, ME	FEXE56	KWBC	FANGYX	E	44.48	68.49
BHM	Birmingham, AL	FEXS43	KWBC	FANBMX	S	33.34	86.45
BIG	Big Delta, AK	FEAK20	KWBC	-----	---	64.00	145.44
BIL	Billings, MT	FEXW40	KWBC	FANBIL	CW	45.48	108.32
BIS	Bismarck, ND	FEXC43	KWBC	FANBIS	CW	46.46	100.45
BKW	Beckley, WV	FEXE48	KWBC	FANRLX	ECS	37.47	81.07

## LIST OF AVN MOS STATIONS (Continued)

STATION ID	NAME	WMO HEADER	AFOS PRODUCT ID	AFOS REGIONAL ROUTING	LAT.	LON.	
BNA	Nashville, TN	FEXS44	KWBC	FANOHX	CS	36.07	86.41
BNO	Burns, OR	FEXW41	KWBC	FANBOI	W	43.35	118.57
BOI	Boise, ID	FEXW41	KWBC	FANBOI	W	43.34	116.13
BOS	Boston, MA	FEXE42	KWBC	FANBOX	E	42.22	71.02
BRO	Brownsville, TX	FEXS45	KWBC	FANBRO	S	25.54	97.26
BRW	Barrow, AK	FEAK20	KWBC	-----	---	71.18	156.47
BTI	Barter Is, AK	FEAK20	KWBC	-----	---	70.08	143.38
BTR	Baton Rouge, LA	FEXS61	KWBC	FANLIX	S	30.32	91.09
BTT	Bettles, AK	FEAK20	KWBC	-----	---	66.55	151.31
BTV	Burlington, VT	FEXE43	KWBC	FANBTV	E	44.28	73.09
BUF	Buffalo, NY	FEXE44	KWBC	FANBUF	E	42.56	78.44
BWI	Baltimore, MD	FEXE60	KWBC	FANLWX	E	39.11	76.40
CAE	Columbia, SC	FEXE45	KWBC	FANCAE	ES	33.57	81.07
CAK	Akron-Canton, OH	FEXE47	KWBC	FANCLE	EC	40.55	81.26
CAR	Caribou, ME	FEXE56	KWBC	FANGYX	E	46.52	68.01
CDB	Cold Bay, AK	FEAK20	KWBC	-----	---	55.12	162.43
CDC	Cedar City, UT	FEXW62	KWBC	FANSLC	CW	37.42	113.06
CDV	Cordova, AK	FEAK20	KWBC	-----	---	60.30	145.30
CHA	Chattanooga, TN	FEXS60	KWBC	FANMRX	ECS	35.02	85.12
CHS	Charleston, SC	FEXE46	KWBC	FANCHS	ES	32.54	80.02
CLE	Cleveland, OH	FEXE47	KWBC	FANCLE	EC	41.24	81.51
CLT	Charlotte, NC	FEXE61	KWBC	FANGSP	ES	35.13	80.56
CMH	Columbus, OH	FEXE49	KWBC	FANILN	EC	40.00	82.53
CNK	Concordia, KS	FEXC73	KWBC	FANTOP	CS	39.33	97.39
CON	Concord, NH	FEXE56	KWBC	FANGYX	E	43.12	71.30
COS	Colo. Springs, CO	FEXC67	KWBC	FANPUB	CS	38.49	104.43
COU	Columbia, MO	FEXC72	KWBC	FANLSX	CS	38.49	92.13
CPR	Casper, WY	FEXC69	KWBC	FANRIW	CW	42.55	106.28
CRP	Corpus Christi, TX	FEXS46	KWBC	FANCRP	S	27.46	97.30
CRW	Charleston, WV	FEXE48	KWBC	FANRLX	ECS	38.22	81.36
CVG	Covington, KY	FEXE49	KWBC	FANILN	EC	39.03	84.40
CXY	Harrisburg, PA	FEXE59	KWBC	FANCTP	E	40.13	76.51
CYS	Cheyenne, WY	FEXC45	KWBC	FANCYS	CW	41.09	104.49
DAB	Daytona Beach, FL	FEXS58	KWBC	FANMLB	S	29.11	81.03
DAY	Dayton, OH	FEXE49	KWBC	FANILN	EC	39.54	84.12
DCA	Wash. National, VA	FEXE60	KWBC	FANLWX	E	38.51	77.02
DDC	Dodge City, KS	FEXC46	KWBC	FANDDC	CS	37.46	99.58
DEN	Denver, CO	FEXC47	KWBC	FANBOU	CS	39.45	104.52
DFW	Dallas-Ft. Worth, TX	FEXS48	KWBC	FANFWS	S	32.54	97.02
DLG	Dillingham, AK	FEAK20	KWBC	-----	---	59.03	158.31
DLH	Duluth, MN	FEXC48	KWBC	FANDLH	C	46.50	92.11
DRT	Del Rio, TX	FEXS63	KWBC	FANEWX	S	29.22	100.55
DSM	Des Moines, IA	FEXC49	KWBC	FANDMX	C	41.32	93.39

DTW Detroit, MI

FEXC66 KWBC FANDTX EC 42.14 83.20

## LIST OF AVN MOS STATIONS (Continued)

STATION ID	NAME	WMO HEADER	AFOS PRODUCT ID	AFOS REGIONAL ROUTING	LAT.	LON.	
EAU	Eau Claire, WI	FEXC64	KWBC	FANMPX	C	44.52	91.29
EKO	Elko, NV	FEXW43	KWBC	FANLKN	W	40.50	115.47
ELP	El Paso, TX	FEXS47	KWBC	FANEPEZ	SW	31.48	106.24
ELY	Ely, NV	FEXW43	KWBC	FANLKN	W	39.17	114.51
ENA	Kenai, AK	FEAK20	KWBC	-----	---	60.34	151.15
ERI	Erie, PA	FEXE47	KWBC	FANCLE	EC	42.05	80.11
EUG	Eugene, OR	FEXW54	KWBC	FANPQR	W	44.07	123.13
EVV	Evansville, IN	FEXC59	KWBC	FANIND	EC	38.03	87.32
EWR	Newark, NJ	FEXE52	KWBC	FANOKX	E	40.42	74.10
EYW	Key West, FL	FEXS57	KWBC	FANAMX	S	24.33	81.45
FAI	Fairbanks, AK	FEAK20	KWBC	-----	---	64.49	147.52
FAR	Fargo, ND	FEXC51	KWBC	FANFGF	C	46.54	96.48
FAT	Fresno, CA	FEXW44	KWBC	FANHNX	W	36.46	119.43
FCA	Kalispell, MT	FEXW52	KWBC	FANMSO	W	48.18	114.16
FLG	Flagstaff, AZ	FEXW45	KWBC	FANFGZ	SW	35.08	111.40
FMY	Ft. Myers, FL	FEXS67	KWBC	FANTBW	S	26.35	81.52
FNT	Flint, MI	FEXC66	KWBC	FANDTX	EC	42.58	83.44
FSD	Sioux Falls, SD	FEXC52	KWBC	FANFSD	C	43.34	96.44
FSM	Fort Smith, AR	FEXS68	KWBC	FANTSA	CS	35.20	94.22
FWA	Fort Wayne, IN	FEXC59	KWBC	FANIND	EC	41.00	85.12
GEG	Spokane, WA	FEXW46	KWBC	FANOTX	W	47.38	117.32
GFK	Grand Forks, ND	FEXC51	KWBC	FANFGF	C	47.57	97.11
GGW	Glasgow, MT	FEXW47	KWBC	FANGGW	CW	48.13	106.37
GJT	Grand Junction, CO	FEXC53	KWBC	FANGJT	CSW	39.07	108.32
GKN	Gulkana, AK	FEAK20	KWBC	-----	---	62.09	145.27
GLD	Goodland, KS	FEXC54	KWBC	FANGLD	C	39.22	101.42
GRB	Green Bay, WI	FEXC55	KWBC	FANGRB	C	44.29	88.08
GRI	Grand Island, NE	FEXC56	KWBC	FANGID	C	40.58	98.19
GRR	Grand Rapids, MI	FEXC57	KWBC	FANGRR	C	42.53	85.31
GSO	Greensboro, NC	FEXE57	KWBC	FANRAH	ES	36.05	79.57
GSP	Greenville, SC	FEXE61	KWBC	FANGSP	ES	34.54	82.13
GTF	Great Falls, MT	FEXW48	KWBC	FANTFX	W	47.29	111.22
GUP	Gallup, NM	FEXS40	KWBC	FANABQ	SW	35.31	108.47
HAT	Cape Hatteras, NC	FEXE51	KWBC	FANMHX	E	35.16	75.33
HLN	Helena, MT	FEXW48	KWBC	FANTFX	W	46.36	112.00
HOM	Homer, AK	FEAK20	KWBC	-----	---	59.38	151.30
HON	Huron, SD	FEXC52	KWBC	FANFSD	C	44.23	98.13
HQM	Hoquiam, WA	FEXW60	KWBC	FANSEW	W	46.58	123.58
HSV	Huntsville, AL	FEXS43	KWBC	FANBMX	S	34.39	86.46
HTS	Huntington, WV	FEXE48	KWBC	FANRLX	ECS	38.22	82.33
HVR	Havre, MT	FEXW48	KWBC	FANTFX	W	48.33	109.46
IAD	Wash. Dulles, VA	FEXE60	KWBC	FANLWX	E	38.57	77.27
IAH	Houston, TX	FEXS49	KWBC	FANHGX	S	29.58	95.21

ICT Wichita, KS

FEXC58 KWBC FANICT

CS

37.39 97.25

## LIST OF AVN MOS STATIONS (Continued)

STATION ID	NAME	WMO HEADER	AFOS PRODUCT ID	AFOS REGIONAL ROUTING	LAT.	LON.
ILG	Wilmington, DE	FEXE54	KWBC	FANPHI	39.40	75.36
ILM	Wilmington, NC	FEXE50	KWBC	FANILM	34.16	77.55
IND	Indianapolis, IN	FEXC59	KWBC	FANIND	39.44	86.17
INL	Intl. Falls, MN	FEXC48	KWBC	FANDLH	48.34	93.23
IPT	Williamsport, PA	FEXE59	KWBC	FANCTP	41.15	76.55
ISN	Williston, ND	FEXC43	KWBC	FANBIS	48.11	103.38
JAN	Jackson, MS	FEXS50	KWBC	FANJAN	32.19	90.05
JAX	Jacksonville, FL	FEXS51	KWBC	FANJAX	30.30	81.42
JFK	NYC Kennedy, NY	FEXE52	KWBC	FANOKX	40.39	73.47
JNU	Juneau, AK	FEAK20	KWBC	-----	58.22	134.35
KTN	Ketchikan, AK	FEAK20	KWBC	-----	55.21	131.42
LAN	Lansing, MI	FEXC57	KWBC	FANGRR	42.47	84.36
LAS	Las Vegas, NV	FEXW49	KWBC	FANVEF	36.05	115.10
LAX	Los Angeles, CA	FEXW50	KWBC	FANLOX	33.56	118.24
LBB	Lubbock, TX	FEXS52	KWBC	FANLUB	33.39	101.49
LBF	North Platte, NE	FEXC60	KWBC	FANLBF	41.08	100.41
LCH	Lake Charles, LA	FEXS53	KWBC	FANLCH	30.07	93.13
LEX	Lexington, KY	FEXC70	KWBC	FANLMK	38.02	84.36
LFK	Lufkin, TX	FEXS64	KWBC	FANSHV	31.14	94.45
LGA	NYC Laguardia, NY	FEXE52	KWBC	FANOKX	40.46	73.54
LGB	Long Beach, CA	FEXW50	KWBC	FANLOX	33.49	118.09
LIT	Little Rock, AR	FEXS54	KWBC	FANLZK	34.44	92.14
LND	Lander, WY	FEXC69	KWBC	FANRIW	42.49	108.44
LWS	Lewiston, ID	FEXW46	KWBC	FANOTX	46.23	117.01
LYH	Lynchburg, VA	FEXE58	KWBC	FANRNK	37.20	79.12
MAF	Midland, TX	FEXS55	KWBC	FANMAF	31.57	102.11
MCG	McGrath, AK	FEAK20	KWBC	-----	62.58	155.37
MCI	Kansas City, MO	FEXC62	KWBC	FANEAX	39.19	94.43
MCN	Macon, GA	FEXS42	KWBC	FANFFC	32.42	83.39
MCO	Orlando, FL	FEXS58	KWBC	FANMLB	28.26	81.19
MCW	Mason City, IA	FEXC49	KWBC	FANDMX	43.09	93.20
MEI	Meridian, MS	FEXS50	KWBC	FANJAN	32.20	88.45
MEM	Memphis, TN	FEXS56	KWBC	FANMEM	35.03	90.00
MFR	Medford, OR	FEXW51	KWBC	FANMFR	42.22	122.52
MGM	Montgomery, AL	FEXS43	KWBC	FANBMX	32.18	86.24
MIA	Miami, FL	FEXS57	KWBC	FANAMX	25.49	80.17
MKE	Milwaukee, WI	FEXC63	KWBC	FANMKX	42.57	87.54
MKG	Muskegon, MI	FEXC57	KWBC	FANGRR	43.10	86.14
MLI	Moline, IL	FEXC50	KWBC	FANDVN	41.27	90.31
MLS	Miles City, MT	FEXW40	KWBC	FANBIL	46.25	105.54
MOB	Mobile, AL	FEXS59	KWBC	FANMOB	30.41	88.15
MOT	Minot, ND	FEXC43	KWBC	FANBIS	48.16	101.17
MQT	Marquette, MI	FEXC74	KWBC	FANMQT	46.32	87.33

MSN Madison, WI

FEXC63 KWBC FANMKX C 43.08 89.20

## LIST OF AVN MOS STATIONS (Continued)

STATION ID	NAME	WMO HEADER	AFOS PRODUCT ID	AFOS REGIONAL ROUTING	LAT.	LON.
MSO	Missoula, MT	FEXW52 KWBC	FANMSO	W	46.55	114.05
MSP	Minneapolis, MN	FEXC64 KWBC	FANMPX	C	44.53	93.13
MSS	Massena, NY	FEXE43 KWBC	FANBTV	E	44.56	74.51
MSY	New Orleans, LA	FEXS61 KWBC	FANLIX	S	29.59	90.15
MYL	McCall, ID	FEXW56 KWBC	FANPIH	CW	44.53	116.06
OKC	Oklahoma City, OK	FEXS62 KWBC	FANOUN	S	35.24	97.36
OLM	Olympia, WA	FEXW60 KWBC	FANSEW	W	46.58	122.54
OMA	Omaha, NE	FEXC65 KWBC	FANOAX	C	41.18	95.54
OME	Nome, AK	FEAK20 KWBC	-----	---	64.30	165.26
ORD	Chicago O'Hare, IL	FEXC44 KWBC	FANLOT	C	41.59	87.54
ORF	Norfolk, VA	FEXE53 KWBC	FANAKQ	E	36.54	76.12
ORT	Northway, AK	FEAK20 KWBC	-----	---	62.57	141.56
OTH	North Bend, OR	FEXW51 KWBC	FANMFR	W	43.25	124.15
OTZ	Kotzebue, AK	FEAK20 KWBC	-----	---	66.52	162.38
PAH	Paducah, KY	FEXC75 KWBC	FANPAH	CS	37.04	88.46
PBI	W. Palm Beach, FL	FEXS57 KWBC	FANAMX	S	26.41	80.07
PDT	Pendleton, OR	FEXW53 KWBC	FANPDT	W	45.41	118.51
PDX	Portland, OR	FEXW54 KWBC	FANPQR	W	45.36	122.36
PHL	Philadelphia, PA	FEXE54 KWBC	FANPHI	E	39.53	75.15
PHX	Phoenix, AZ	FEXW55 KWBC	FANPSR	SW	33.26	112.01
PIA	Peoria, IL	FEXC40 KWBC	FANILX	C	40.40	89.41
PIH	Pocatello, ID	FEXW56 KWBC	FANPIH	CW	42.55	112.36
PIR	Pierre, SD	FEXC41 KWBC	FANABR	C	44.23	100.17
PIT	Pittsburgh, PA	FEXE55 KWBC	FANPBZ	E	40.30	80.13
PNS	Pensacola, FL	FEXS59 KWBC	FANMOB	S	30.28	87.12
PVD	Providence, RI	FEXE42 KWBC	FANBOX	E	41.44	71.26
PWM	Portland, ME	FEXE56 KWBC	FANGYX	E	43.39	70.19
RAP	Rapid City, SD	FEXC68 KWBC	FANUNR	CW	44.03	103.04
RDD	Redding, CA	FEXW58 KWBC	FANSTO	W	40.30	122.18
RDM	Redmond, OR	FEXW53 KWBC	FANPDT	W	44.16	121.09
RDU	Raleigh-Durham, NC	FEXE57 KWBC	FANRAH	ES	35.52	78.47
RFD	Rockford, IL	FEXC44 KWBC	FANLOT	C	42.12	89.06
RIC	Richmond, VA	FEXE53 KWBC	FANAKQ	E	37.30	77.20
RIV	Riverside, CA	FEXW50 KWBC	FANLOX	W	33.54	117.15
RKS	Rock Springs, WY	FEXC69 KWBC	FANRIW	CW	41.36	109.04
RNO	Reno, NV	FEXW57 KWBC	FANREV	W	39.30	119.48
ROA	Roanoke, VA	FEXE58 KWBC	FANRNK	ES	37.19	79.58
ROC	Rochester, NY	FEXE44 KWBC	FANBUF	E	43.07	77.40
ROW	Roswell, NM	FEXS40 KWBC	FANABQ	SW	33.18	104.32
RSL	Russell, KS	FEXC58 KWBC	FANICT	CS	38.52	98.49
RST	Rochester, MN	FEXC61 KWBC	FANARX	C	43.55	92.30
SAC	Sacramento, CA	FEXW58 KWBC	FANSTO	W	38.31	121.30
SAN	San Diego, CA	FEXW59 KWBC	FANSGX	W	32.44	117.10

SAT San Antonio, TX FEXS63 KWBC FANEWX S 29.32 98.28

## LIST OF AVN MOS STATIONS (Continued)

STATION ID	NAME	WMO HEADER	AFOS PRODUCT ID	AFOS REGIONAL ROUTING	LAT.	LON.
SAV	Savannah, GA	FEXE46	KWBC	FANCHS	32.08	81.12
SBN	South Bend, IN	FEXC44	KWBC	FANLOT	41.42	86.19
SCC	Deadhorse, AK	FEAK20	KWBC	-----	70.12	148.28
SDF	Louisville, KY	FEXC70	KWBC	FANLMK	38.11	85.44
SEA	Seattle-Tacoma, WA	FEXW60	KWBC	FANSEW	47.27	122.18
SFO	San Francisco, CA	FEXW61	KWBC	FANMTR	37.37	122.23
SGF	Springfield, MO	FEXC71	KWBC	FANSGF	37.14	93.23
SHR	Sheridan, WY	FEXC45	KWBC	FANCYS	44.46	106.58
SHV	Shreveport, LA	FEXS64	KWBC	FANSHV	32.28	93.49
SIT	Sitka, AK	FEAK20	KWBC	-----	57.04	135.21
SJT	San Angelo, TX	FEXS65	KWBC	FANSJT	31.22	100.30
SLC	Salt Lake City, UT	FEXW62	KWBC	FANSLC	40.46	111.58
SLE	Salem, OR	FEXW54	KWBC	FANPQR	44.55	123.00
SNP	Saint Paul, AK	FEAK20	KWBC	-----	57.09	170.13
SPI	Springfield, IL	FEXC40	KWBC	FANILX	39.50	89.40
SPS	Wichita Falls, TX	FEXS62	KWBC	FANOUN	33.58	98.29
STC	St. Cloud, MN	FEXC64	KWBC	FANMPX	45.33	94.04
STL	St. Louis, MO	FEXC72	KWBC	FANLSX	38.45	90.23
SUX	Sioux City, IA	FEXC52	KWBC	FANFSD	42.24	96.23
SYR	Syracuse, NY	FEXE41	KWBC	FANBGM	43.07	76.07
TAD	Trinidad, CO	FEXC67	KWBC	FANPUB	37.15	104.20
TCS	Truth or Cons., NM	FEXS40	KWBC	FANABQ	33.14107.16	TKA
	Talkeetna, AK	FEAK20	KWBC	-----	62.18	150.06
TLH	Tallahassee, FL	FEXS66	KWBC	FANTLH	30.23	84.22
TOL	Toledo, OH	FEXE47	KWBC	FANCLE	41.36	83.48
TOP	Topeka, KS	FEXC73	KWBC	FANTOP	39.04	95.38
TPA	Tampa, FL	FEXS67	KWBC	FANTBW	27.58	82.32
TRI	Bristol, TN	FEXS60	KWBC	FANMRX	36.29	82.24
TUL	Tulsa, OK	FEXS68	KWBC	FANTS	36.12	95.54
TUS	Tucson, AZ	FEXW63	KWBC	FANTWC	32.07	110.56
TVC	Traverse City, MI	FEXC42	KWBC	FANAPX	44.44	85.35
TYS	Knoxville, TN	FEXS60	KWBC	FANMRX	35.49	83.59
UIL	Quillayute, WA	FEXW60	KWBC	FANSEW	47.57	124.33
VCT	Victoria, TX	FEXS46	KWBC	FANCRP	28.51	96.55
VTN	Valentine, NE	FEXC60	KWBC	FANLBF	42.52	100.33
VWS	Valdez, AK	FEAK20	KWBC	-----	61.08	146.21
WMC	Winnemucca, NV	FEXW43	KWBC	FANLKN	40.54	117.48
YAK	Yakutat, AK	FEAK20	KWBC	-----	59.31	139.40
YKM	Yakima, WA	FEXW53	KWBC	FANPDT	46.34	120.32
YNG	Youngstown, OH	FEXE47	KWBC	FANCLE	41.16	80.40
YUM	Yuma, AZ	FEXW55	KWBC	FANPSR	32.40	114.36
Y62	S. Ste. Marie, MI	FEXC42	KWBC	FANAPX	46.28	84.22
5MK	McKinley Park, AK	FEAK20	KWBC	-----	63.44	148.55

5WT Whittier, AK FEAK20 KWBC ----- --- 60.46 148.41

## Interpretation of the AVN-Based Objective Forecast Message

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NMCFANALY

FEXE40 KWBC 080000

AVN-BASED OBJECTIVE GUIDANCE 12/08/91 0000 UTC

ALB SUN 08| MON 09| TUE 10

MN/MX 49| 34 45| 24 27

POP12 32| 69 100| 67 58

CPOS 0| 2 29| 75 99

CLDS 62| 76 97| 97 88

- AFOS product identification (AFOS users only).

- Bulletin header. (See below for headers, AFOS PILS, and stations).

- Forecast identification, initial date, and time (UTC).

- Station ID, valid day of week and month (UTC).

- Min and max temperature (°F) for LOCAL nighttime/daytime periods.

- Probability of precipitation for 0000-1200 and 1200-0000 UTC periods.

- Conditional prob. of snow for 0000-1200 and 1200-0000 UTC periods.

- Mean opaque cloudiness (%) for 0000-1200 and 1200-0000 UTC periods.

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F E X E

FEXE47KWBC (FANCLE)

CAK - Akron-Canton, OH

FEXE40KWBC (FANALY)

ALB - Albany, NY

FEXE41KWBC (FANBGM)

AVP - Scranton, PA

BGM - Binghamton, NY

SYR - Syracuse, NY

FEXE42KWBC (FANBOX)

BDL - Hartford, CT

BOS - Boston, MA

PVD - Providence, RI

FEXE43KWBC (FANBTV)

BTV - Burlington, VT

MSS - Massena, NY

FEXE44KWBC (FANBUF)

BUF - Buffalo, NY

ROC - Rochester, NY

FEXE45KWBC (FANCAE)

AGS - Augusta, GA

CAE - Columbia, SC

FEXE46KWBC (FANCHS)

CHS - Charleston, SC

SAV - Savannah, GA

F E X E

FEXE49KWBC (FANILN)

CLE - Cleveland, OH

ERI - Erie, PA

TOL - Toledo, OH

YNG - Youngstown, OH

FEXE48KWBC (FANRLX)

BKW - Beckley, WV

CRW - Charleston, WV

HTS - Huntington, WV

FEXE51KWBC (FANMHX)

HAT - Cape Hatteras, NC

FEXE52KWBC (FANOKX)

EWR - Newark, NJ

JFK - NYC Kennedy, NY

LGA - NYC Laguardia , NY

FEXE53KWBC (FANAKQ)

ORF - Norfolk, VA

RIC - Richmond, VA

FEXE54KWBC (FANPHI)

ABE - Allentown, PA

ACY - Atlantic City, NJ

ILG - Wilmington, DE

PHL - Philadelphia, PA

FEXE55KWBC (FANPBZ)

PIT - Pittsburgh, PA

FEXE56KWBC (FANGYX)

BGR - Bangor, ME

CAR - Caribou, ME

CON - Concord, NH

PWM - Portland, ME

F E X E / F E X C

FEXE58KWBC (FANRNC)

LYH - Lynchburg, VA

ROA - Roanoke, VA

FEXE59KWBC (FANCTP)

BFD - Bradford, PA

CXY - Harrisburg, PA

IPT - Williamsport, PA

FEXE60KWBC (FANLWX)

BWI - Baltimore, MD

DCA - Wash. National, VA

IAD - Wash. Dulles, VA

FEXE61KWBC (FANGSP)

CLT - Charlotte, NC

GSP - Greenville, SC

FEXC40KWBC (FANILX)

PIA - Peoria, IL

SPI - Springfield, IL

FEXC41KWBC (FANABR)

ABR - Aberdeen, SD

PIR - Pierre, SD

FEXC42KWBC (FANAPX)

APN - Alpena, MI

TVC - Traverse City, MI

Y62 - S. Ste. Marie, MI

FEXC43KWBC (FANBIS)

BIS - Bismarck, ND  
ISN - Williston, ND  
MOT - Minot, ND

FEXC44KWBC (FANLOT)

ORD - Chicago, IL  
RFD - Rockford, IL  
SBN - South Bend, IN

F E X C

FEXC45KWBC (FANCYS)  
BFF - Scottsbluff, NE  
CYS - Cheyenne, WY  
SHR - Sheridan, WY

FEXC46KWBC (FANDDC)  
DDC - Dodge City, KS

FEXC47KWBC (FANBOU)

DEN - Denver, CO

FEXC48KWBC (FANDLH)

DLH - Duluth, MN  
INL - Intl. Falls, MN

FEXC49KWBC (FANDMX)

ALO - Waterloo, IA  
DSM - Des Moines, IA  
MCW - Mason City, IA

FEXC50KWBC (FANDVN)

MLI - Moline, IL

FEXC51KWBC (FANFGF)

FAR - Fargo, ND  
GFK - Grand Forks, ND

FEXC52KWBC (FANFSD)

FSD - Sioux Falls, SD  
HON - Huron, SD  
SUX - Sioux City, IA

FEXC53KWBC (FANGJT)

GJT - Grand Jct., CO

FEXC54KWBC (FANGLD)

GLD - Goodland, KS

FEXC55KWBC (FANGRB)

GRB - Green Bay, WI

F E X C

FEXC56KWBC (FANGID)  
GRI - Grand Island, NE

FEXC57KWBC (FANGRR)  
GRR - Grand Rapids, MI  
LAN - Lansing, MI  
MKG - Muskegon, MI

FEXC58KWBC (FANICT)

ICT - Wichita, KS  
RSL - Russell, KS

FEXC59KWBC (FANIND)

EVV - Evansville, IN  
FWA - Fort Wayne, IN  
IND - Indianapolis, IN

FEXC60KWBC (FANLBF)

LBF - North Platte, NE  
VTN - Valentine, NE

FEXC61KWBC (FANARX)

RST - Rochester, MN

FEXC62KWBC (FANEAX)

MCI - Kansas City, MO

FEXC63KWBC (FANMKX)

MKE - Milwaukee, WI  
MSN - Madison, WI

FEXC64KWBC (FANMPX)

EAU - Eau Claire, WI  
MSP - Minneapolis, MN  
STC - St. Cloud, MN

FEXC65KWBC (FANOAX)

OMA - Omaha, NE

F E X C / F E X S	<u>FEXS42KWBC (FANFFC)</u> AHN - Athens, GA ATL - Atlanta, GA DTW - Detroit, MI FNT - Flint, MI	F E X S	<u>FEXS58KWBC (FANMLB)</u> DAB - Daytona Beach, FL MCO - Orlando, FL
<u>FEXC66KWBC (FANDTX)</u>	MCN - Macon, GA	<u>FEXS44KWBC (FANOHX)</u> BNA - Nashville, TN	<u>FEXS60KWBC (FANMRX)</u> AVL - Asheville, NC CHA - Chattanooga, TN TRI - Bristol, TN TYS - Knoxville, TN
<u>FEXC67KWBC (FANPUB)</u>	BHM - Birmingham, AL HSV - Huntsville, AL TAD - Trinidad, CO	<u>FEXS45KWBC (FANBRO)</u> BRO - Brownsville, TX	<u>FEXS59KWBC (FANMOB)</u> MOB - Mobile, AL PNS - Pensacola, FL
<u>FEXC68KWBC (FANUNR)</u>	MGM - Montgomery, AL	<u>FEXS46KWBC (FANCRP)</u> CRP - Corpus Christi, TX VCT - Victoria, TX	<u>FEXS61KWBC (FANLIX)</u> BTR - Baton Rouge, LA MSY - New Orleans, LA
RAP - Rapid City, SD		<u>FEXS47KWBC (FANEPEZ)</u> ELP - El Paso, TX	<u>FEXS62KWBC (FANOUN)</u> OKC - Oklahoma City, OK SPS - Wichita Falls, TX
<u>FEXC69KWBC (FANRIW)</u>	CPR - Casper, WY LND - Lander, WY RKS - Rock Springs, WY	<u>FEXS48KWBC (FANFWS)</u> ACT - Waco, TX DFW - Dallas-Ft.Wrth, TX	<u>FEXS63KWBC (FANEWX)</u> AUS - Austin, TX DRT - Del Rio, TX SAT - San Antonio, TX
<u>FEXC70KWBC (FANLMK)</u>	LEX - Lexington, KY SDF - Louisville, KY	<u>FEXS49KWBC (FANHGX)</u> IAH - Houston, TX	<u>FEXS64KWBC (FANSHV)</u> LFK - Lufkin, TX SHV - Shreveport, LA
<u>FEXC71KWBC (FANSGF)</u>	SGF - Springfield, MO	<u>FEXS50KWBC (FANJAN)</u> JAN - Jackson, MS MEI - Meridian, MS	<u>FEXS65KWBC (FANSJT)</u> ABI - Abilene, TX SJT - San Angelo, TX
<u>FEXC72KWBC (FANLSX)</u>	COU - Columbia, MO STL - St. Louis, MO	<u>FEXS51KWBC (FANJAX)</u> JAX - Jacksonville, FL	<u>FEXS66KWBC (FANTLH)</u> ABY - Albany, GA TLH - Tallahassee, FL
<u>FEXC73KWBC (FANTOP)</u>	CNK - Concordia, KS TOP - Topeka, KS	<u>FEXS52KWBC (FANLUB)</u> LBB - Lubbock, TX	<u>FEXS67KWBC (FANTBW)</u> FMY - Ft. Myers, FL TPA - Tampa, FL
<u>FEXC74KWBC (FANMOT)</u>	MQT - Marquette, MI	<u>FEXS53KWBC (FANLCH)</u> LCH - Lake Charles, LA	<u>FEXS68KWBC (FANTS)</u> FSM - Fort Smith, AR TUL - Tulsa, OK
<u>FEXC75KWBC (FANPAH)</u>	PAH - Paducah, KY	<u>FEXS54KWBC (FANLZK)</u> LIT - Little Rock, AR	<u>FEXW40KWBC (FANBIL)</u> BIL - Billings, MT MLS - Miles City, MT
<u>FEXS40KWBC (FANABQ)</u>	ABQ - Albuquerque, NM GUP - Gallup, NM ROW - Roswell, NM TCS - Truth or Cons., NM	<u>FEXS55KWBC (FANMAF)</u> MAF - Midland, TX	<u>FEXW41KWBC (FANBOI)</u> BNO - Burns, OR BOI - Boise, ID
<u>FEXS41KWBC (FANAMA)</u>		<u>FEXS56KWBC (FANMEM)</u> MEM - Memphis, TN	
AMA - Amarillo, TX		<u>FEXS57KWBC (FANAMX)</u> EYW - Key West, FL MIA - Miami, FL PBI - W. Palm Beach, FL	

<u>FEXW42KWBC (FANEKA)</u>	F E X W	<u>FEXW56KWBC (FANPIH)</u>	F E X W / F E A K 2 0	TKA - Talkeetna, AK VWS - Valdez, AK YAK - Yakutat, AK 5MK - McKinley Park, AK 5WT - Whittier, AK
ACV - Arcata, CA		MYL - McCall, ID		
<u>FEXW43KWBC (FANLKN)</u>	<u>FEXW44KWBC (FANHNX)</u>	PIH - Pocatello, ID	<u>FEXW58KWBC (FANSTO)</u>	VWS - Valdez, AK YAK - Yakutat, AK 5MK - McKinley Park, AK 5WT - Whittier, AK
EKO - Elko, NV	BFL - Bakersfield, CA		SAC - Sacramento, CA	
ELY - Ely, NV	FAT - Fresno, CA	<u>FEXW57KWBC (FANREV)</u>	<u>FEXW59KWBC (FANSGX)</u>	
WMC - Winnemucca, NV	<u>FEXW45KWBC (FANFGZ)</u>	RDD - Redding, CA	SAN - San Diego, CA	
	FLG - Flagstaff, AZ	RNO - Reno, NV		
<u>FEXW46KWBC (FANOTX)</u>	GEG - Spokane, WA		<u>FEXW60KWBC (FANSEW)</u>	
<u>FEXW47KWBC (FANGGW)</u>	GGW - Glasgow, MT		HQM - Hoquiam, WA	
<u>FEXW48KWBC (FANTFX)</u>	GTF - Great Falls, MT		OLM - Olympia, WA	
	HLN - Helena, MT		SEA - Seattle-Tacoma, WA	
	HVR - Havre, MT		UIL - Quillayute, WA	
<u>FEXW49KWBC (FANVEF)</u>	LAS - Las Vegas, NV		<u>FEXW61KWBC (FANMTR)</u>	
<u>FEXW50KWBC (FANLOX)</u>			SFO - San Francisco, CA	
LAX - Los Angeles, CA			<u>FEXW62KWBC (FANSLC)</u>	
LGB - Long Beach, CA			CDC - Cedar City, UT	
RIV - Riverside, CA			SLC - Salt Lake City, UT	
<u>FEXW51KWBC (FANMFR)</u>	MFR - Medford, OR		<u>FEXW63KWBC (FANTWC)</u>	
	OTH - North Bend, OR		TUS - Tucson, AZ	
<u>FEXW52KWBC (FANMSO)</u>	FCA - Kalispell, MT		<u>FEAK20KWBC</u>	
	MSO - Missoula, MT		ADQ - Kodiak, AK	
<u>FEXW53KWBC (FANPDT)</u>	PDT - Pendleton, OR		AKN - King Salmon, AK	
	RDM - Redmond, OR		ANC - Anchorage, AK	
	YKM - Yakima, WA		ANN - Annette Is., AK	
<u>FEXW54KWBC (FANPOR)</u>	AST - Astoria, OR		BET - Bethel, AK	
	EUG - Eugene, OR		BIG - Big Delta, AK	
	PDX - Portland, OR		BRW - Barrow, AK	
	SLE - Salem, OR		BTI - Barter Is., AK	
<u>FEXW55KWBC (FANPSR)</u>	PHX - Phoenix, AZ		BTT - Bettles, AK	
	YUM - Yuma, AZ		CDB - Cold Bay, AK	
			CDV - Cordova, AK	
			DLG - Dillingham, AK	
			ENA - Kenai, AK	
			FAI - Fairbanks, AK	
			GKN - Gulkana, AK	
			HOM - Homer, AK	
			JNU - Juneau, AK	
			KTN - Ketchikan, AK	
			MCG - McGrath, AK	
			OME - Nome, AK	
			ORT - Northway, AK	
			OTZ - Kotzebue, AK	
			SCC - Deadhorse, AK	
			SIT - Sitka, AK	
			SNP - St. Paul Is., AK	

